

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/844,679

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On

light-emitting devices with Iridium-complex as a triplet emissive center" JJAP Vol. 38(1999) No. 12B/in press, pp L1502-L1504). Organic materials are excited when carrier electrons or holes injected by an electric field are recombined, and emit light when they fall down to a ground state. In this event, excited organic molecules take a single excited state of high energy (electrons exhibit reverse spin) and a triplet excited state of low energy (electrons exhibit normal spin). The luminescence is classified according to the duration of afterglow after the supply of excitation energy is stopped, and generally classified into fluorescence when the afterglow lasts for several nano seconds and phosphorescence when the afterglow lasts for several micro seconds. But this classification is not exact strictly. In the phosphorescence, light emission duration decreases in proportion to the elevation in ambient temperature. On the other hand, in the fluorescence, the duration of afterglow does not depend on the temperature and the afterglow process is extremely rapid.

Pages 4-5, please delete the bridging paragraph, and replace it with the following new paragraph:

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An organic EL element according to the present invention has a laminate of an anode, a hole injecting layer made of an organic compound and laminated in contact with the anode, a light emitting layer made of an organic compound, an electron transport layer made of an organic compound and a cathode, wherein said light emitting layer comprises of a carbazole compound as a main component and includes an iridium complex compound at a concentration of 0.5 wt% to 8 wt%.

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Page 5, please delete the first full paragraph, and replace it with the following new paragraph:

In one aspect of the organic EL element according to the invention, said iridium complex compound is tris(2-phenylpyridine) iridium.

Page 5, please delete the second full paragraph, and replace it with the following new paragraph:

In another aspect of the organic EL element according to the invention, said carbazole compound is 4,4'-N,N'-dicarbazole-biphenyl.

Page 5, please delete the third full paragraph, and replace it with the following new paragraph:

In a further aspect of the organic EL element according to the invention, said carbazole compound is 4,4',4"-tris(N-carbazolyl)triphenylamine.

Page 8, please delete the second full paragraph, and replace it with the following new paragraph:

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In the embodiments, a carbazole compound material, which is a host material as a major component included in the light emitting layer 4 is, for example, 4,4'-N,N'-dicarbazole-biphenyl (which is abbreviated as "CBP" in this paper), represented by the following chemical formula (2). Also, 4,4'4,"-tris-(N-carbazolyl)triphenylamine, represented by the following chemical formula (3) may be used for the host material in the light emitting layer 4 of the organic EL element.

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Page 28, please delete the first full paragraph, and replace it with the following new paragraph:

Furthermore, instead of CBP, 4,4',4''-tris(N-carbazolyl)triphenylamine was used for the host material in the light emitting layer of the organic EL element and resulted in the similar effect to the above embodiment. It was therefore confirmed that the concentration of iridium complex compound in the light emitting layer of the carbazole compound ranging from 0.5 wt% to 8 wt% provides the effectiveness in prolonging lifetime of the organic EL element.

Page 28, please delete the second full paragraph, and replace it with the following new paragraph:

As described above, according to the present invention, the light emitting layer comprises a carbazole compound as a main component and includes an iridium complex compound at a concentration of 0.5 wt% to 8 wt%, thereby providing an organic EL element which can emit light for a long time period.

IN THE CLAIMS:

Please enter the following amended claims:

1. (Amended) An organic electroluminescence element having a laminate of an anode, a hole injecting layer made of an organic compound and laminated in contact with said anode, a light emitting layer made of an organic compound, an electron transport layer made of an organic compound, and a cathode, wherein said light emitting layer is made of a carbazole compound and includes an iridium complex compound at a concentration of 0.5 wt% to 6 wt%.